

CLAIMS

1 1. A transmitter for transmitting reverse optical signals in a broadband communications system,
2 the transmitter comprising:
3 an input port for receiving analog RF signals from downstream;
4 a converter for digitizing the analog RF signals; and
5 a carrier-detect circuit coupled to the converter for detecting the presence of digital RF signals
6 and for allowing the digital RF signals to be provided to an output of the transmitter and transmitted
7 upstream.

1 2. The transmitter of claim 1, further comprising:
2 a delay circuit coupled to the converter for delaying the digital RF signals; and
3 a switch coupled to the delay circuit and controlled by the carrier-detect circuit,
4 wherein the carrier-detect circuit closes the switch enabling a path for the transmission of the
5 digital RF signals.

1 3. The transmitter of claim 1, wherein the broadband communications system includes:
2 a plurality of transmitters;
3 a digital network coupled to each of the plurality of transmitters for receiving and combining
4 the digital RF signals;
5 a receiver coupled to the digital network for receiving the combined digital RF signals, and
6 for converting the combined digital RF signals to analog RF signals; and
7 a headend coupled to the receiver for receiving and processing the analog RF signals,
8 whereby, due to a burst-mode transmission from each of the plurality of transmitters, the
9 digital network combines the digital RF signals from the plurality of transmitters using header
10 identifier information.

1 4. The transmitter of claim 3, wherein the broadband communications system is a cable
2 television system that may include both a digital headend and an analog headend for generating and
3 receiving the digital RF signals and the analog RF signals.

1 5. The transmitter of claim 4, wherein the broadband communications system further includes:
2 a discriminator circuit coupled to the digital network for analyzing the header identifier
3 information,
4 wherein dependent upon the header identifier information, the discriminator circuit provides
5 the digital RF signals to the digital headend and provides the analog RF signals to the analog headend.

1 6. A communications system for transmitting and receiving signals over a communications
2 medium, the communications system comprising:
3 subscriber equipment for transmitting reverse signals;
4 a plurality of transmitters coupled to at least one of the subscriber equipment for digitizing the
5 reverse signals;
6 a digital network coupled to each of the plurality of transmitters for combining the digital
7 signals;
8 a receiver coupled to the digital network for converting the digital signals back to the original
9 reverse signals; and
10 a headend coupled to the receiver for processing the reverse signals,
11 whereby the communications system combines the reverse signals from each of the plurality
12 of transmitters within the digital network and delivers the reverse signals to the receiver.

1 7. The communications system of claim 6, the plurality of transmitters further comprising:
2 a carrier-detect circuit for detecting when reverse signals are present within the transmitter;
3 a delay circuit for delaying the reverse signals; and
4 a switch coupled to the delay circuit and controlled by the carrier-detect circuit,
5 wherein when the carrier-detect circuit detects reverse signals, the carrier-detect circuit allows
6 the reverse signals to be transmitted upstream through the digital network.

1 8. The communications system of claim 6, wherein digitizing the reverse signals is
2 accomplished with an analog-to-digital converter.

1 9. The communications system of claim 6, wherein each of the plurality of transmitters blocks
2 the reverse signals and encapsulates the blocks into packets with associated identifier header
3 information for identification within the headend.

1 10. The communications system of claim 9, wherein the communications system is a cable
2 television system that may include both a digital headend and an analog headend.

1 11. The communications system of claim 10, wherein the communications system further
2 comprises:
3 a discriminator circuit coupled to the digital network for analyzing the associated identifier
4 header information,
5 wherein dependent upon the identifier header information, the discriminator circuit provides
6 the packets to one of the digital headend and the analog headend.

1 12. The communications system of claim 6, wherein the communications medium is a hybrid
2 fiber coaxial cable.

- 1 13. The communications system of claim 10, wherein a control system is used in connection with
2 both the digital and the analog headends for preventing collision of the reverse signals.

FILED 10/19/00